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EXAMINER

RIVERO, MINERVA

ART UNIT PAPER NUMBER

2655

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

11/14

Office Action Summary

Application No.

10/015,025

Applicant(s)

BUSH, STEPHEN FRANCIS

Examiner

Minerva Rivero

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/11/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 6 is objected to because of the following informalities: It is clear that claim 6 is missing its dependency. For examination purposes, the examiner will assume dependency on independent claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Austen-Brown (US Patent 6,655,631).

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4. Regarding claim 7, Austen-Brown disclose a dialog processing method comprising
- detecting commands (*instructions received*, Col. 11, Lines 55-59) and
- interpreting the commands in context of dynamic UAV state information (*design less pilot and cockpit*, Col. 10, Lines 23-24; *speech control system*, Col. 12, Lines 38-39) and
- producing responses in accordance with the interpretation of the detected commands (Col. 12, Lines 41-42).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631) in view of Farmakis *et al.* (US Patent 5,714,948).

Regarding claim 1, Austen-Brown discloses a dialog processing system

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and method comprising

a control system that records a state of the UAV (*design less pilot and cockpit*, Col. 10, Lines 23-24; *feedback status and speech control system*, Col. 12, Lines 38-39, Col. 12, Lines 41-42; *control system communicates performance characteristics*, Col. 11, Lines 55-59);

a recognition unit for recognizing text and analog speech input data (*speech control system*, Col. 12, Lines 38-39) and

an interpretation unit dynamically linked to the control system and linked to the recognition unit for interpreting the input data (*speech control system*, Col. 12, Lines 38-39) and

whereby the interpretation unit utilizes UAV state data to interpret the input data to generate appropriate output data (*design less pilot and cockpit*, Col. 10, Lines 23-24; *feedback status and speech control system*, Col. 12, Lines 38-39.)

However, Austen-Brown does not explicitly disclose but Farmakis *et al.* suggest a a recognition unit for recognizing text (*text is generated and displayed, and incoming information is identified and forwarded to appropriate computer*, Col. 13, Lines 49-62); and a response unit linked to the control system and linked to the interpretation unit for producing text or audible analog speech output data (*transmitted information may be text or synthesized voice*, Col. 13, Lines 33-39; *generated text*, Col. 13, Lines 49-50).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Austen-Brown with a recognition unit for recognizing text and a response unit for producing text and audible analog speech data as suggested by Farmakis *et al.* in order to allow the control system to interact with the user in multiple ways, according to the situation. Enabling the recognition of text, and the production of text and speech allows for a versatile system that can be operated by a handicapped person (mute or hearing-impaired).

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631) in view of Farmakis *et al.* (US Patent 5,714,948), as applied to claim 1 above, and further in view of Damiba (US 2002/0169613).

Regarding claim 2, the combined teachings of Austen-Brown and Farmakis *et al.* do not explicitly disclose

the interpretation unit utilizes natural language processing.

However, Damiba suggests the interpretation unit utilizes natural language processing ([0003], Lines 1-9; *object can represent an aircraft*, [0200], full paragraph).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Austen-Brown and

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Farmakis *et al.* by having the interpretation unit utilize natural language processing.

Natural language processing is a desirable attribute in an automatic speech recognition system (see Damiba, [0003]) and adds flexibility to the system by avoiding the need for memorized stylized commands.

8. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631) in view of Farmakis *et al.* (US Patent 5,714,948), as applied to claim 1 above, and further in view of Schoneburg *et al.* (US 2002/0133347).

9. Regarding claim 3, the combined teachings of Austen-Brown and Farmakis *et al.* do not disclose but Schoneburg *et al.* suggest the voice interpretation unit comprises a dialog manager that controls which sub-dialog is active by transitioning from one dialog state to another (*managing the context of the dialog*, [0078], Lines 2-5; *regulating the transitions of the states of the system*, [0161], Lines 3-4).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Austen-Brown and Farmakis *et al.* with a voice interpretation unit that comprises a dialog manager that controls which sub-dialog is active by transitioning from one dialog state to another as suggested by Schoneburg *et al.* in order to execute a valid dialog between the system and the user.

10. Regarding claims 4 and 5, neither Austen-Brown nor Farmakis *et al.* explicitly disclose but Schoneburg *et al.* do disclose the input data is dynamically merged with UAV states selected from the group consisting of current states, past states and predicted states (*considered rules*, [0164], Lines 1-3; *past context*, [0162], Lines 14-22; *current state*, [0165], Lines 5-8; *eliminating extraneous possibilities*, [0082], Lines 1-3) and the input data is dynamically merged to with past, present and predicted states of the UAV ([0081], full paragraph; *preprocessing the input*, Fig. 10; *considered rules*, [0164], Lines 1-3; *past context*, [0162], Lines 14-22; *current state*, [0165], Lines 5-8; *eliminating extraneous possibilities*, [0082], Lines 1-3).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Austen-Brown and Farmakis *et al.* by having the input data dynamically merged with UAV states selected from the group consisting of current states, past states and predicted states and dynamically merged with past, present and predicted states of the UAV, as suggested by Schoneburg *et al.* in order to evaluate the input data in the appropriate context. Using a discourse control mechanism that considers past and present states of the system allows the control system to provide the best possible responses to a particular situation, as taught by Schoneburg *et al.* ([0101], full paragraph).

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11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631) in view of Farmakis *et al.* (US Patent 5,714,948), as applied to claim 1 above, and further in view of Cope *et al.* (US 6,529,866).

Regarding claim 6, the combined teachings of Austen-Brown and Farmakis *et al.* do not disclose but Cope *et al.* do disclose

the interpretation unit is limited to a predetermined air traffic control specific vocabulary (*interpretation*, Col. 1, Lines 57-59; *air traffic control commands*, Col. 5, Lines 54-60).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Austen-Brown and Farmakis *et al.* by having the interpretation unit limited to a predetermined air traffic control specific vocabulary in order to avoid supplying the interpretation unit with unnecessary vocabulary which would slow down its response time.

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631), as applied to claim 7 above, and in view of Lewis *et al.* (2002/0161584).

Regarding claim 8, Austen-Brown does not explicitly disclose but Lewis *et al.*

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do disclose natural language processing methods are used to interpret the commands (*user can express commands using natural language*, [0007]).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Austen-Brown with natural language processing methods to be used in the interpretation of commands, as disclosed by Lewis *et al.* in order to allow UAV dialog processing system to receive spontaneous, naturally spoken commands from the ground station.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Austen-Brown (US Patent 6,655,631), as applied to claim 7 above, in view of Schoneburg *et al.* (US 2002/0133347).

Regarding claim 9, Austen-Brown does not explicitly disclose but Schoneburg *et al.* suggest the state information includes current states, past states and predicted states (*considered rules*, [0164], Lines 1-3; *past context*, [0162], Lines 14-22; *current state*, [0165], Lines 5-8; *eliminating extraneous possibilities*, [0082], Lines 1-3).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Austen-Brown by having the UAV state information include present states, past states and predicted states, as

suggested by Schoneburg *et al.* in order to evaluate the input data in the appropriate context. Using a discourse control mechanism that considers past and present states of the system allows the control system to provide the best possible responses to a particular situation, as taught by Schoneburg *et al.* ([0101], full paragraph).

14. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631), as applied to claim 7 above, in view of Chapados *et al.* (US Patent 6,356,869).

15. Regarding claim 10, Austen-Brown does not explicitly disclose but Chapados *et al.* do disclose the interpreting step (*conversation analysis*) is executed as a finite state machine (Col. 5, Lines 57-59).

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Austen-Brown by having the interpreting step executed as a finite state machine in order to efficiently use system states as a basis for evaluating the dialog and producing appropriate responses.

16. Regarding claim 13, Austen-Brown does not explicitly disclose the interpreting step uses a grammar to construct dialogs while the UAV is in flight.

However, Chapados *et al.* suggest interpreting the step uses a grammar to construct dialogs real time (*discourse management and natural-dialogue speech application*, Col. 3, Lines 63-65).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Austen-Brown with Chapados *et al.* by having the interpreting step use a grammar to construct dialogs while a UAV is in flight, in order to allow the UAV to have a dynamic dialog processing capability to receive spontaneous, naturally spoken commands and produce the appropriate responses.

17. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631) in view of Chapados *et al.* (US Patent 6,356,869), as applied to claim 13 above and further in view of Stammmler *et al.* (US 6,839,670).

Regarding claim 14, the combined teachings of Austen-Brown and Chapados *et al.* do not disclose the interpreting step uses a learning process to add unknown commands to a list of possible commands.

However, Stammmler *et al.* do disclose the interpreting step uses a learning process to add unknown commands to a list of possible commands (*additional speech commands*, Col. 4, Lines 24-29).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the combined teachings of Austen-Brown and Chapados *et al.* and use a learning process to add unknown commands to a list of possible commands as taught by Stammier *et al.* in order to allow the system to be updated according to evolving requirements.

18. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631), as applied to claim 7 above, in view of Jenkins (US Patent 4,725,956).

19. Regarding claim 11, Austen-Brown does not explicitly disclose but Jenkins suggests the commands may initiate from the UAV (*autopilot*, Col. 3, Lines 33-36).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Austen-Brown with commands initiated by the UAV as suggested by Jenkins in order to allow the UAV to accomplish its mission without needing more real-time control from the ground or other vehicles.

20. Regarding claim 12, Austen-Brown does not explicitly disclose but Jenkins does disclose the commands may initiate from a source external to the UAV (Col. 1, Lines 43-47).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the commands initiated from a source external to the UAV in order to allow the remote control of the aircraft.

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown, as applied to claim 7 above, and in view of Monaco *et al.* (US Patent 6,314,402).

Regarding claim 15, Austen-Brown does not explicitly disclose but Monaco *et al.* do disclose the commands are broken down into sub-commands (Col. 19, Lines 33-37).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Austen-Brown and have the commands broken down into sub-commands, as taught by Monaco *et al.* in order for the dialog processing system to have a relevant logical structure.

22. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Austen-Brown (US Patent 6,655,631), in view of Neumann *et al.* (US Patent 6,735,592).

Regarding claim 16, Austen-Brown does not explicitly disclose but Neumann *et al.* suggest the interpreting step is limited to dialog states common to air traffic control dialogs (*air-traffic control system*, Col. 5, Line 66 – Col. 6, Line 2; *dialog-states*, Col. 16, Lines 30-31 and 37-39).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Austen-Brown by having the interpreting step limited to dialog states common to air traffic control dialogs in order to avoid supplying the air traffic control dialog processing system with unnecessary dialog states which would slow down its response time.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gould *et al.* (US Patent 6,839,669) disclose a system and method of parsing a speech input to determine the presence of actions or commands.


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24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minerva Rivero whose telephone number is (703) 605-4377. The examiner can normally be reached on Monday-Friday 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Ivars Smits can be reached on (703) 305-9508. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER